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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,713	02/06/2002	Hilmar Gugel	21295-40	8638
29127	7590	01/20/2004	EXAMINER	
HOUSTON ELISEEVA			NGUYEN, THONG Q	
4 MILITIA DRIVE, SUITE 4			ART UNIT	
LEXINGTON, MA 02421			PAPER NUMBER	

2872

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/683,713	Applicant(s) GUGEL ET AL.	
	Examiner Thong Q. Nguyen	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 4, 6 and 8-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-4, 6, 8-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The present Office action is made in response to the amendment filed on 11/06/2003. It is noted that in the mentioned amendment, applicant has canceled claims 5 and 17-18. As a result, the remaining claims 1, 3-4, 6, and 8-16 are examined in this Office action.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 3-4, 6, 8, 10-12, 14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dixon et al (U.S. Patent No. 5,760,951, of record).

Dixon et al discloses a confocal scanning microscope having an illuminating system, a detecting system and two microscopic lens assemblies disposed opposite to each other with respect to the sample to be illuminated. In columns 8-9 and figs. 7a, for instance, they teach that the illuminating light is splitted into two light paths by a beam splitter (400) wherein each light path will follow the same optical path length from the beam splitter to the sample (204). With regard to the feature that the illuminating beam light path has an inherent illumination

point spread function and the detecting beam light path has an inherent detection point spread function as recited, it is noted that any beam path still has an inherent point spread function, and the claims fail to recite any specific feature/limitations for the point spread function of either the illumination beam path or the detection beam path.

The light splitted by the beam splitter has unmodified characteristics before it incident onto the sample. The light from the sample is also has an unmodified characteristics before it is received by the detecting system. In column 9, lines 5+, they discloses the use of polarizing elements wherein one half-wave plate is placed in one light path and a polarizer is placed in other light path for the purpose of preservation the symmetry of the two equal light paths. The polarizing elements used in the light path will act as an optical element for varying the phase or polarization of the light and thereby to modify the shape of illuminating light and/or detected light. As a result of using the polarizer and half-wave plate in the illuminating light path and the detecting light path then each of the illuminating light path and detecting light path after passing through the half-wave plate or the polarizer is a modified light. While Dixon et al do not clearly state about the feature concerning the principal maxima and the secondary maxima; however, it is noted that the optical element as described in the present specification, in particular, in pages 5 and 6, sections [0017] and [0020], are directed to an optical element in the form of a filter or a polarization without any specific limitations concerning the structures of the optical element. Thus, the use

of half-wave plate and polarizer in each of the illuminating light path and/or the detecting light path in combination will cause an overall point spread function which will inherent change the axial positions of the secondary maxima of the overall point spread function. If it is not inherent then it would have been obvious to one skilled in the art to modify the microscope provided by Dixon et al by utilizing any suitable polarizing element in each of the illuminating light path and detecting light path for the purpose of reducing the intensity caused by the secondary maxima of an overall point spread function to obtain an image with better quality.

5. Claims 1, 3-4, 6, 8-12 and 14 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Engelhardt et al (Germany reference No. 199 14 049, of record).

Engelhardt et al discloses a confocal scanning microscope having an illuminating system, a detecting system and two microscopic lens assemblies disposed opposite to each other with respect to the sample to be illuminated. In columns 4-7 and the single figure, they teach that the illuminating light is splitted into two light paths by a beam splitter (5) wherein each light path will follow the same optical path length from the beam splitter to the sample (13). With regard to the feature that the illuminating beam light path has an inherent illumination point spread function and the detecting beam light path has an inherent detection point spread function as recited, it is noted that any beam path still has an inherent point spread function, and the claims fail to recite any specific feature/limitations

for the point spread function of either the illumination beam path or the detection beam path.

The light splitted by the beam splitter has an unmodified characteristics before it incident onto the sample. The light from the sample is also has an unmodified characteristics before it is received by the detecting system. In columns 6-7, they discloses the use of shutters (18), optics (21) and other optical elements in the assembly (8) for the purpose of influencing the interference phenomena, especially phase alignment, and thereby for modification the shape of illuminating light and/or detected light. As a result of using the shutters and optics in the illuminating light path and the detecting light path then each of the illuminating light path and detecting light path after passing through the half-wave plate or the polarizer is a modified light. While Engelhardt et al do not clearly state about the feature concerning the principal maxima and the secondary maxima; however, it is noted that the optical element as described in the specification, in particular, in pages 5 and 6, sections [0017] and [0020], are directed to an optical element in the form of a filter or a polarization without any specific limitations concerning the structures of the optical element. Thus, the use of shutters and optics in each of the illuminating light path and/or the detecting light path in combination will cause an overall point spread function which will inherent change the axial positions of the secondary maxima of the overall point spread function. If it is not inherent then it would have been obvious to one skilled in the art to modify the microscope provided by Engelhardt et al by utilizing any suitable optical elements such as

shutters or polarizing elements in each of the illuminating light path and detecting light path for the purpose of reducing the intensity caused by the secondary maxima of an overall point spread function to obtain an image with better quality.

6. Claims 9, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Engelhardt et al in view of Krause (U.S. Patent No. 5,587,832, of record).

The microscope as provided by Engelhardt et al does not disclose that the optical component used to modify the shape of illumination light could be a LCD or a dichroic beam-splitter or an adaptive system having deformable mirror. However, the use of such mentioned element is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present specification in the paragraph [0020] –[0024]. Further, the use of an optical element having function to modify a shape of a light beam which optical element could be one of the mentioned elements is known to one skilled in the art as can be seen in the microscope provided by Krause. In particular, Krause discloses a scanning microscope having an illuminating system and a detecting system. In columns 2-5 and figs. 1-3, he teaches the use of a pattern aperture array (14) in the illuminating beam path and a pattern aperture array (32) in the detecting beam path. The light from the light source (18) is modified by the array (14) and then reflected from a dichroic element (22) to incident on the specimen (20). The light from the specimen passes through the element (22) to incident onto a detecting system (26). The operations of the arrays (14 and 32) are under

the controls of a computerized system. As a result, the illuminating light as well as the detected light are subjected to modifications based on the operations of the arrays. With regard to the position of the optical element as recited in claim 9, such a feature is also not critical to the invention because applicant has also disclosed that the optical element can be placed at any position along the illuminated/detected light path. See present specification in paragraph [0019] and present claim 10. Thus, absent of any criticality, it would have been obvious to one skilled in the art at the time the invention was made to modify the microscope provided by Engelhardt et al by utilizing any suitable optical elements including the optical element in the form of a dichroic beam-splitter or an array of deformable mirror as suggested by Krause for the purpose of varying the shape of an illuminating light beam.

Response to Arguments

7. Applicant's arguments filed on 11/06/2003 have been fully considered but they are not persuasive.

A) Regarding to the rejections of the claims under 35 USC 102(b), applicant has argued that the cited art does not disclose all of the features recited in the present claims. The examiner respectfully disagrees with the applicant and respectfully invited the applicant to show which element claimed is not disclosed by the cited art. Applicant is respectfully invited to review the rejection which is modified as those shown in this Office action wherein the Examiner has shown that each cited art provides all of the elements and their arrangements which

meet the structural limitations claimed. Regard to the point spread function; the examiner has clearly provided/shown that such a feature is shown in the art of record. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

B) Regarding to the rejection of the claims under 35 USC 103(a), since applicant has not provided any specific arguments; therefore, the claims are still rejected for the same reasons as set forth in the previous Office action and repeated in this Office action.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

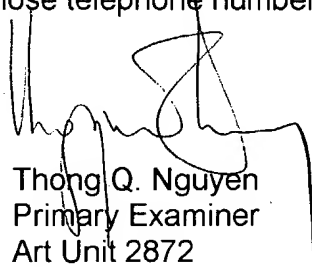
Art Unit: 2872

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Nguyen whose telephone number is (703) 308-4814. **Note that after Jan. 20, the Examiner may be reached at his new telephonic number of 571-272-2316.** The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (703) 305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.



Thong Q. Nguyen
Primary Examiner
Art Unit 2872

January 12, 2004